

## THE CROSSED SUTURE.

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**I**N MANY operative procedures, when the method of immediately and completely closing the wound is employed, it is quite essential that the several layers of the walls of the incision be brought together separately and perfectly. In some instances, particularly when the attempt is made to bring together the aponeurosis of the external oblique and the edges of Poupart's ligament, in the operation for radical cure of hernia, the tension is so great as to lead one to distrust the buried catgut suture when employed for this purpose. On the other hand, if the operator depends upon including all of the structures comprising the wall of the wound in the suture in the ordinary manner it will quite generally happen that the skin surfaces will be drawn upon, while, at the deeper portions of the wound, considerable gaping occurs.

In order to obtain all the advantages of the buried suture, and yet be enabled to remove the latter at will, at the same time doing away with the necessity for depending upon an absorbable material, always uncertain as to the length of time that it will hold with sufficient firmness in the tissue, I have devised what I have called "The Crossed Suture." It consists essentially of a suture which separately unites the different layers of the wall of the wound, and which is crossed over each layer in turn as it progresses from below upwards from the deeper portions of the wound to the integumentary surface. Either silkworm-gut, silver wire, silk or linen thread may be employed. My own preference is decidedly for the first named. The material is cut to lengths and is threaded at both ends. The thread is secured in the eye of the needle by passing the end of the silkworm-gut, which emerges as the needle is threaded, a second time through the eye of the latter from the same side as that from which it was originally passed.

When the flat Hagedorn needles are used this is not a difficult matter. When the loop which is thus formed is drawn taut the needle is held securely to the thread (Fig. 1). A single knot securing the thread to the needle-eye will serve the same purpose, but has the disadvantage of offering a somewhat greater resistance when the needle is drawn through the tissues, and,

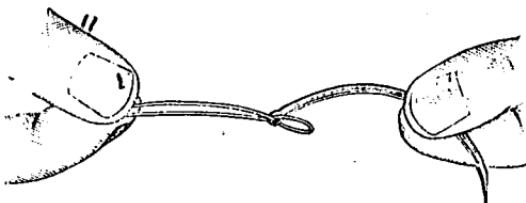


Fig. 1. Manner of threading the needle.

occasionally, as when the serous coat of the intestine is to be included in the suture, leads to a tearing out of the thread by reason of having made an unnecessarily large track in the tissues in its passage.

The thread being attached at both ends to the needles, the

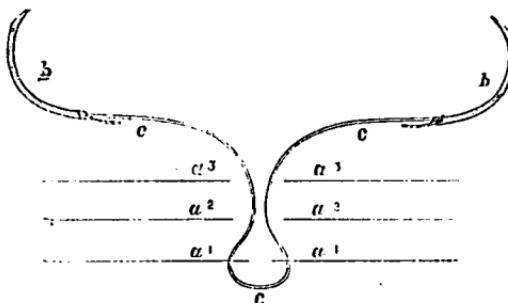


FIG. 2. Showing suture passed through lowermost layer at "a."  $a^1$  1st layer,  $a^2$  2d layer,  $a^3$  3d layer.

latter are passed through the lowermost layer from below upwards, one through each edge of the latter (Fig. 2). The thread is then crossed over the layer, the needles reversing positions. The needles are then passed through the next layer, are again reversed as regards position, thus crossing the thread again and over the second layer to be secured (Fig. 3). This process is repeated

until all the layers are secured, the skin being the last to be included (Fig. 4), when the ends of the sutures are secured in the ordinary manner. A reference to the accompanying diagrams will aid the reader in understanding the method of application.

This suture may be left in position as long as the exigencies of the case demand its presence. In its removal the thread is cut to one side of the knot lying upon the skin in the usual way, and withdrawn by making steady traction upon the other side. It may be employed wherever it is desirable to firmly and securely approximate the deeper portions of the wound independently of the superficial or skin portion, and still permit of removal. In

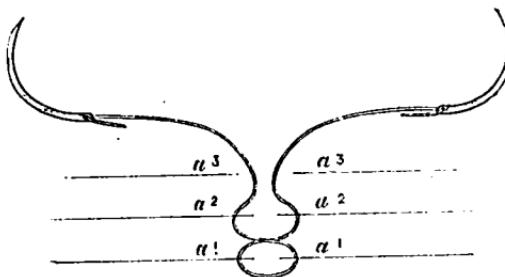


FIG. 3. Showing suture crossed and passed through second layer, from below upwards.

laparotomy wounds it will be found particularly useful, first securing the peritoneal surfaces and then the muscular and skin layers in turn. It is likewise especially advantageous in perineorraphy and in uniting divided nerves and tendons. There is an advantage in passing the needle from below upwards, particularly in the case of the skin, whatever method of suturing is adopted, and this consists in lessening the dangers of infection from the deeper portions of the integument itself. When it is remembered that this structure is filled with excretory glands with a scavenger-like function, and that the ducts of these are more or less filled with excrementitious material, in spite of the most vigorous application of the brush and soap and water, which, after all, only cleans the outer surface, the importance of passing

the suture in such a manner as not to drag any of this with it into the depths of the wound will be appreciated.

In passing I might mention a little device which I have found of use in temporarily securing sutures preparatory to tying, and which has saved me much annoyance and valuable time, preventing as it does the entanglement of sutures already

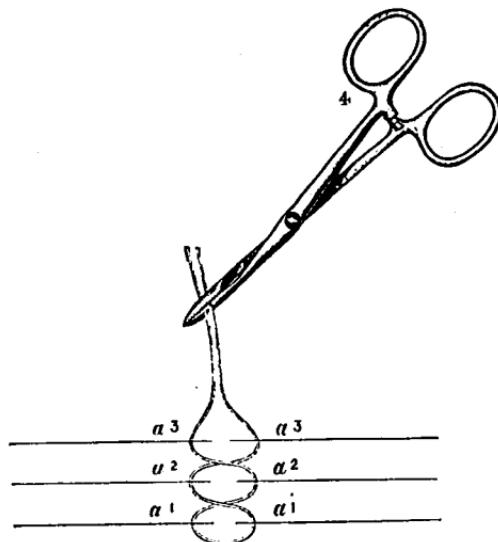


FIG. 4. Showing all three layers included in the crossed suture, ready for tying. "4," ordinary haemostatic forceps temporarily securing suture for ready identification until all are ready for tying.

passed and left lying loosely pending their final adjustment. It consists in clamping the two ends—these being left sufficiently long for the purpose—of each suture in a separate haemostatic forceps as soon as passed. As fast as they are clamped they are laid to one side, and when all is ready each suture is unclamped in turn and tied. (Fig. 4.)

NOTE.—Since writing the above my attention has been called to a perineorraphy suture described by Heppner and figured in Vol. II., pp. 980, 981, of Pozzi's *Gynaecology*, first edition, which in some respects resembles the "crossed suture."